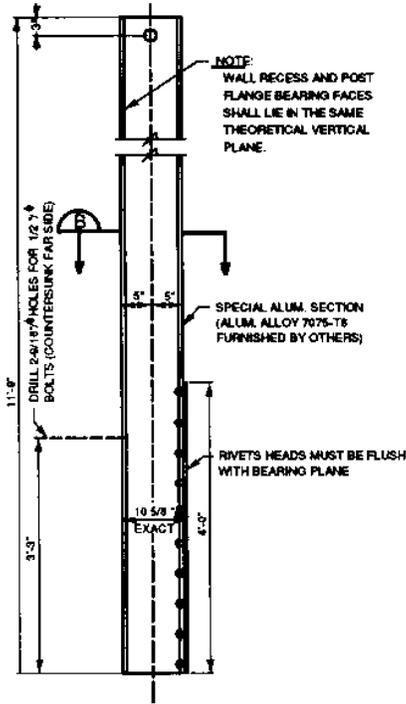
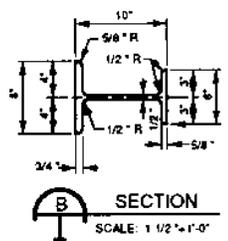


SECTIONAL ELEVATION AT CENTERLINE
SCALE: 1"=1'-0"



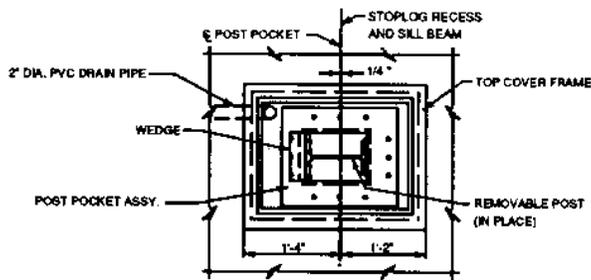
POST DETAIL
SCALE: 1"=1'-0"



SECTION
SCALE: 1 1/2"=1'-0"

NOTE: THE DETAILS SHOWN ON THIS DRAWING WERE USED IN A PAST CORPS OF ENGINEERS DESIGN. THESE TYPICAL DETAILS ARE FURNISHED FOR INFORMATION ONLY AND MAY NOT CORRESPOND WITH THE CRITERIA AND DESIGN EXAMPLES INCLUDED IN APPENDICES B-E.

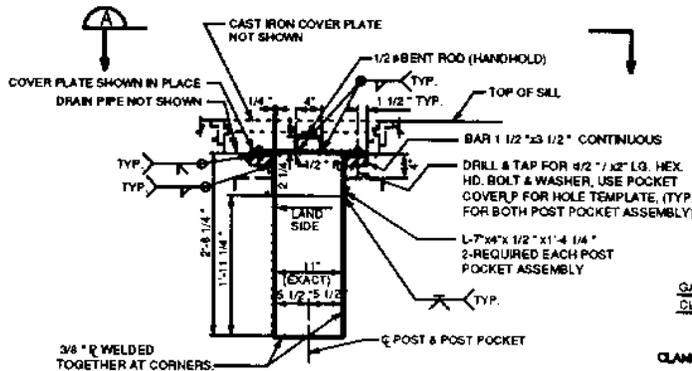
GATE CLOSURES LOCAL FLOOD PROTECTION PROJECTS TYPICAL STOPLOG CLOSURE DETAILS I	
	DEPARTMENT OF THE ARMY U.S. ARMY CORPS OF ENGINEERS WASHINGTON, D.C.
PLATE 2A	



SECTION
SCALE: 1"=1'-0"

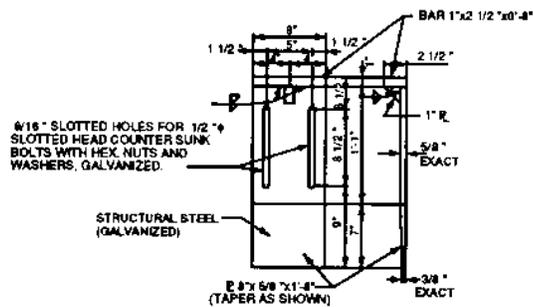
EMBEDDED POCKET WITH POST IN PLACE

SCALE: 1"=1'-0"



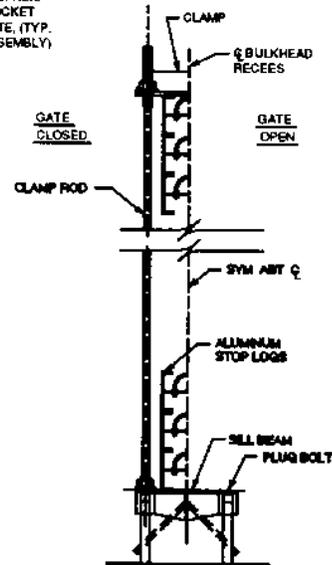
DETAIL 2

SCALE: 1"=1'-0"



WEDGE DETAIL

SCALE: 1 1/2"=1'-0"



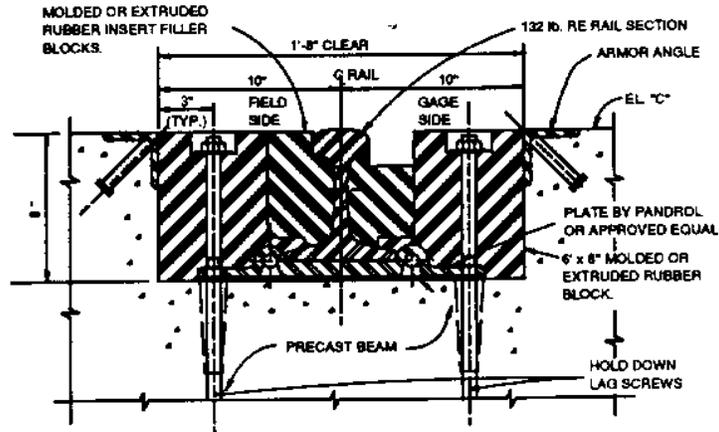
CLAMP ANCHOR ASSEMBLY

SCALE: NONE

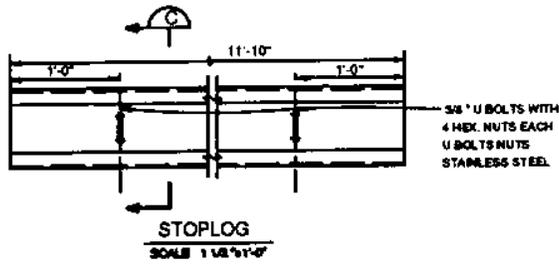
NOTE: THE DETAILS SHOWN ON THIS DRAWING WERE USED IN A PAST CORPS OF ENGINEERS DESIGN. THESE TYPICAL DETAILS ARE FURNISHED FOR INFORMATION ONLY AND MAY NOT CORRESPOND WITH THE CRITERIA AND DESIGN EXAMPLES INCLUDED IN APPENDICES B-E.

GATE CLOSURES
LOCAL FLOOD PROTECTION PROJECTS
TYPICAL STOPLOG CLOSURE DETAILS #

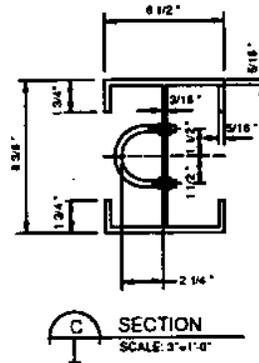
DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
WASHINGTON, D.C.



DETAIL 1
RAIL ASSEMBLY
 SCALE: 3"=1'-0"



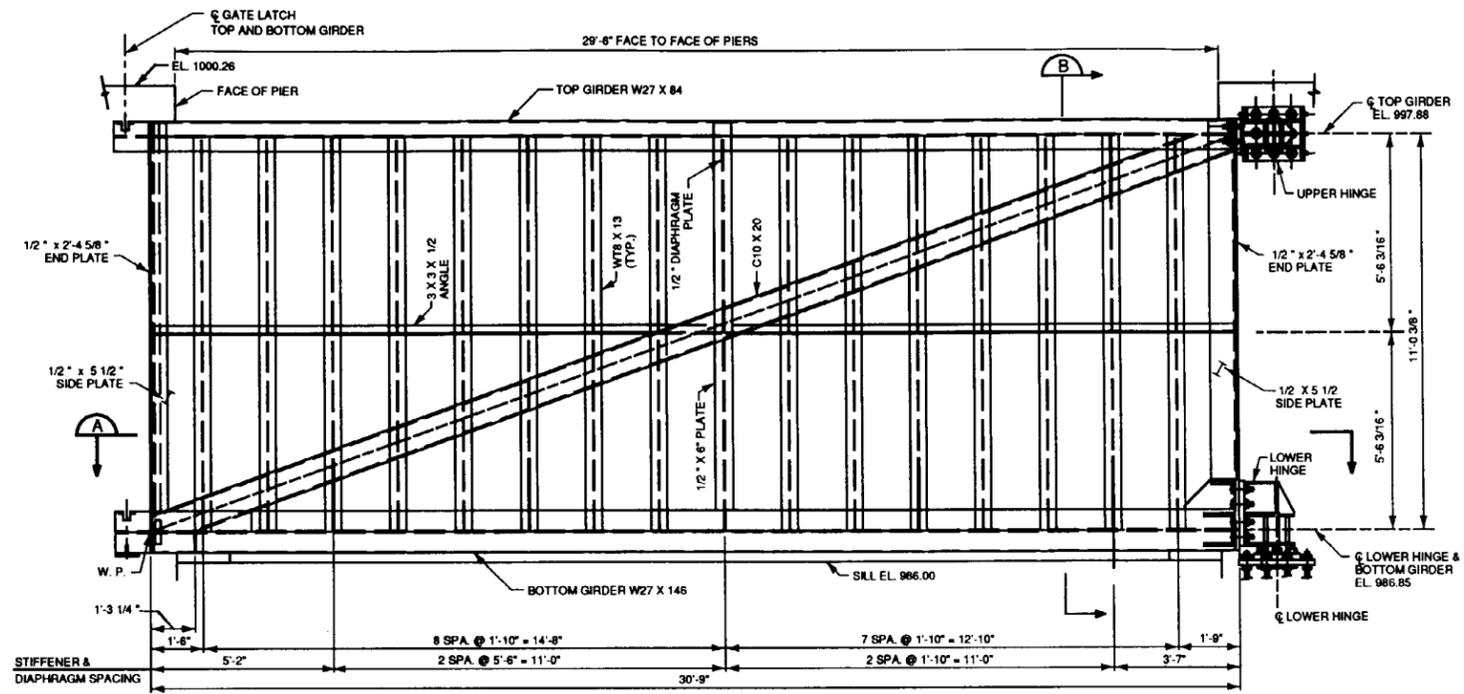
STOPLOG
 SCALE: 1/8"=1'-0"



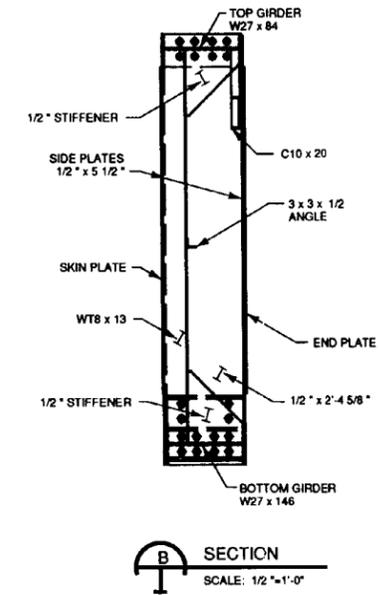
SECTION
 SCALE: 3"=1'-0"

NOTE: THE DETAILS SHOWN ON THIS DRAWING WERE USED IN A PAST CORPS OF ENGINEERS DESIGN. THESE TYPICAL DETAILS ARE FURNISHED "FOR INFORMATION ONLY" AND MAY NOT CORRESPOND WITH THE CRITERIA AND DESIGN EXAMPLES INCLUDED IN APPENDICES B-E.

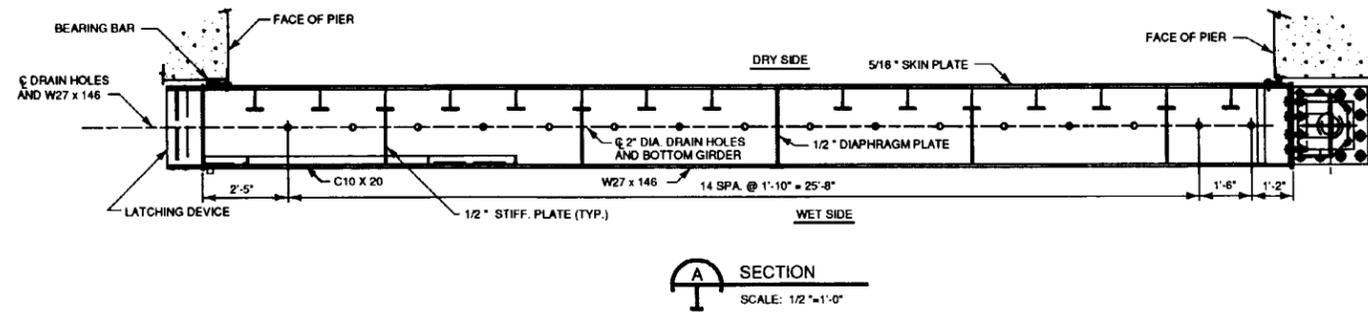
GATE CLOSURES LOCAL FLOOD PROTECTION PROJECTS TYPICAL STOPLOG CLOSURE DETAILS III	
	DEPARTMENT OF THE ARMY U.S. ARMY CORPS OF ENGINEERS WASHINGTON, D.C.
PLATE 2C	



WET SIDE ELEVATION
SCALE: 1/2" = 1'-0"



SECTION B
SCALE: 1/2" = 1'-0"



SECTION A
SCALE: 1/2" = 1'-0"

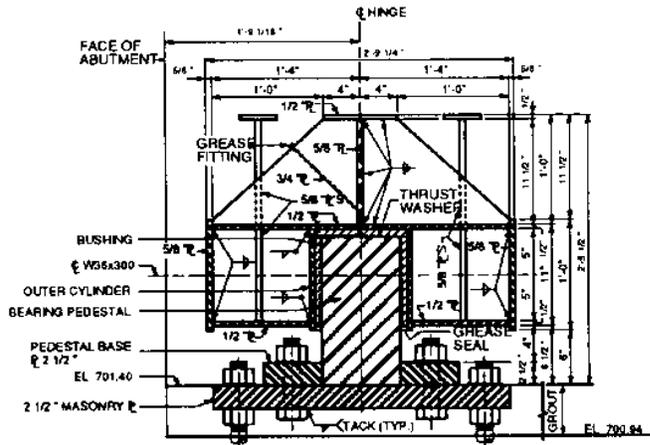
NOTE: THE DETAILS SHOWN ON THIS DRAWING WERE USED IN A PAST CORPS OF ENGINEERS DESIGN. THESE TYPICAL DETAILS ARE FURNISHED FOR INFORMATION ONLY* AND MAY NOT CORRESPOND WITH THE CRITERIA AND DESIGN EXAMPLES INCLUDED IN APPENDICES B THROUGH E.

- NOTE:
1. TYPICAL HINGE DETAILS ARE SHOWN ON PLATES 4, 5, 6, & 7.
 2. TYPICAL SEAL DETAILS ARE SHOWN ON PLATES 8, 9, & 10.
 3. TYPICAL LATCH DETAILS ARE SHOWN ON PLATES 11 & 12.

GATE CLOSURES LOCAL FLOOD PROTECTION PROJECTS TYPICAL SWING GATE
DEPARTMENT OF THE ARMY U.S. ARMY CORPS OF ENGINEERS WASHINGTON, D.C.
PLATE 3

REQUIRED LIST						
MARK	NO. REQ.	DESCRIPTION	MATERIAL	EST. WT. (LBS. EA.)	USED WITH	REMARKS
13/1	1	BUSHING	BRONZE		13/13	ASTM B22 UNS NO. C91300
13/2	1	HINGE PIN	STAINLESS STEEL			ASTM A276 TYPE XM19
13/3	1	RECESSED PIN NUT	CRS		13/2	
13/4	1	THRUST WASHER	BRONZE		13/6	ASTM B22 UNS NO. C91300
13/5	1	BUSHING	BRONZE		13/14	ASTM B22 UNS NO. C91300
13/6	1	BEARING PEDESTAL	STAINLESS STEEL	158	13/7	ASTM A276 TYPE XM19
13/7	1	PEDESTAL BASE PLATE	STAINLESS STEEL	271	13/6	ASTM A240
13/8	20	ANCHOR BOLT	SEE NOTE A			
13/9	20	ANCHOR PLATE	STEEL	70	13/8	ASTM A-36
13/10	AS REQ'D	SHIM PLATE	STEEL		TOP HINGE	ASTM A-36
13/11	10	ANCHOR PLATE		407	TOP HINGE	
13/12	10	ANCHOR PLATE	STEEL	35	13/11	ASTM A-36
13/13	1	OUTER CYLINDER	STEEL	26	13/1	ASTM A-53 GRADE B OR
13/14	1	OUTER CYLINDER	STEEL		13/5	ASTM A-501
13/A	8	1 3/4" x 7 3/8" HEX HD BOLT (3 1/4" THD LG) W/ HEAVY HEX NUT & WASHER	SEE NOTE A		BOTT. HINGE	
13/B	1	GREASE SEAL "HOS1 NO. 503007" AS MFR BY C.R.I.N.D. OR APP. EQUAL 10.0" O.D.				COMMERCIAL GRADE
13/C	2	GREASE FITTINGS 1/8" NPT TYPE				COMMERCIAL GRADE
13/D	20	1 1/4" x 9 3/8" 1/4" HEX HD BOLT (2 3/4" THD LG) W/ HEAVY HEX NUT & WASHER	SEE NOTE A		BOTT. HINGE	
13/E	8	SET SCREW-HEX SOCKET 1 1/4" x 3 3/8" CLASS #3 W/HEX JAM NUTS	STEEL		TOP HINGE	ASTM A-325
13/F	2	GREASE SEAL "C.R.I.N.D. TYPE CRWH1 #30933"-3.90" I.D. OR APP. EQUAL				COMMERCIAL GRADE
13/G	10	1 1/2" x 9 3/8" 1/4" (2 3/4" THD LG) W/ HEAVY HEX NUT & FLAT WASHER	SEE NOTE A		TOP HINGE	

NOTE "A": A.S.T.M. A-183, CLASS I-C, GRADE B89 OR B89A BOLTS WITH ASTM A194 TYPE 303, GR.8FA HEAVY HEX. NUTS.
NOTE: QUANTITIES SHOWN ARE FOR ONE GATE ONLY.
NOTE: 1. ALL STEEL ASTM A36, UNLESS OTHERWISE NOTED.



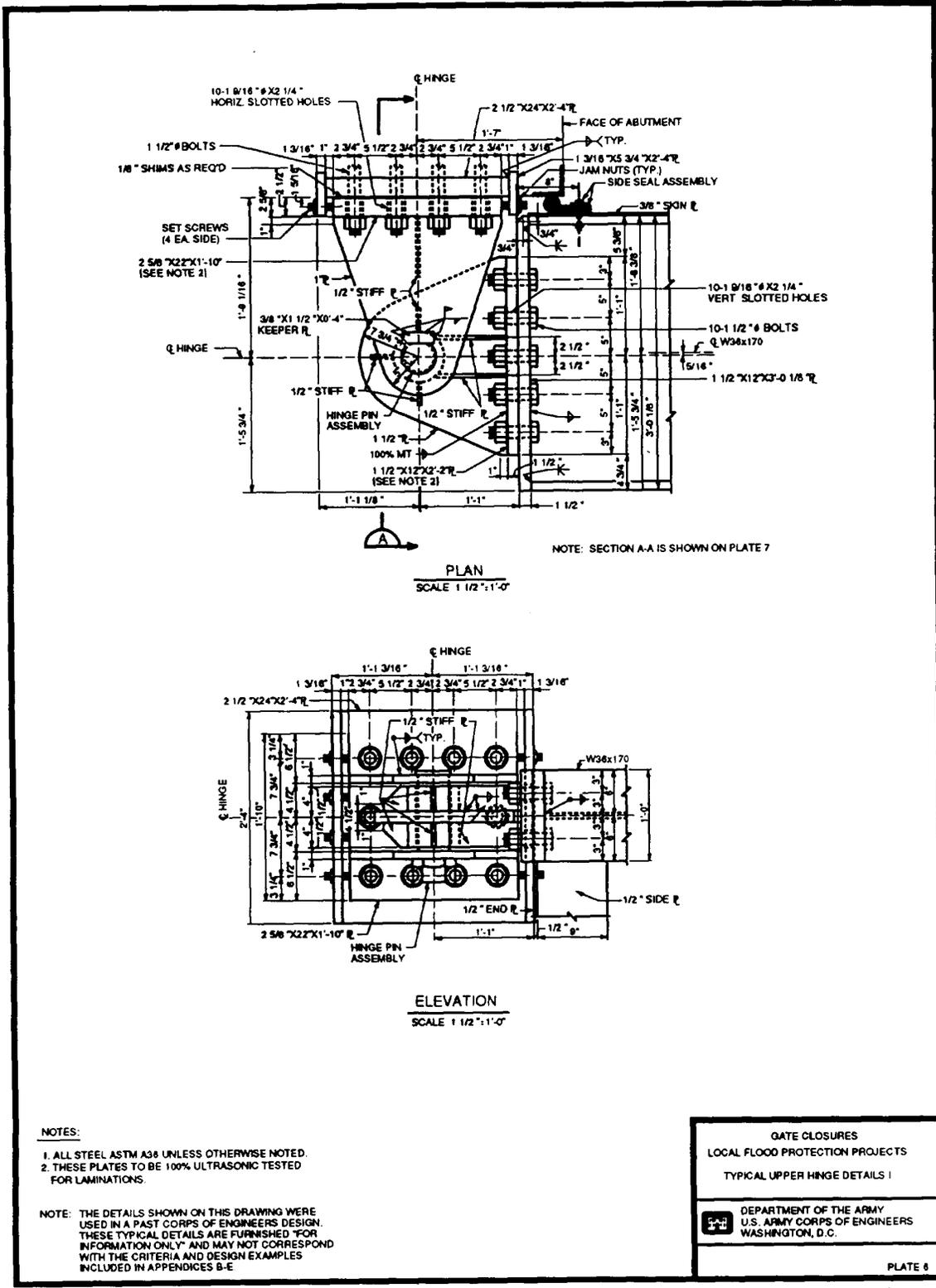
SECTION A
SCALE 1/2" = 1'-0"

NOTE: THE DETAILS SHOWN ON THIS DRAWING WERE USED IN A PAST CORPS OF ENGINEERS DESIGN. THESE TYPICAL DETAILS ARE FURNISHED FOR INFORMATION ONLY AND MAY NOT CORRESPOND WITH THE CRITERIA AND DESIGN EXAMPLES INCLUDED IN APPENDICES B-E.

GATE CLOSURES
LOCAL FLOOD PROTECTION PROJECTS
TYPICAL LOWER HINGE DETAILS II

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
WASHINGTON, D.C.

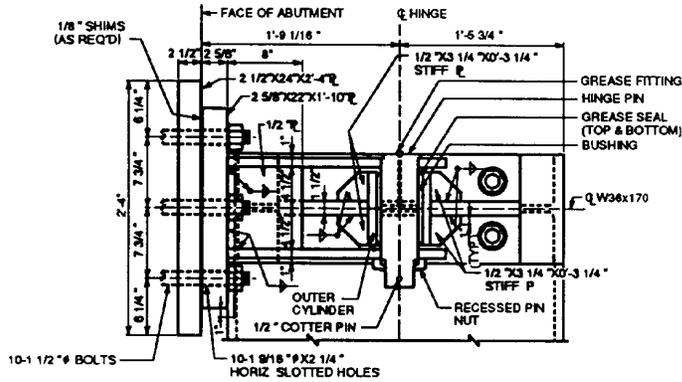
PLATE 5



GATE CLOSURES
LOCAL FLOOD PROTECTION PROJECTS
TYPICAL UPPER HINGE DETAILS I

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
WASHINGTON, D.C.

PLATE 6



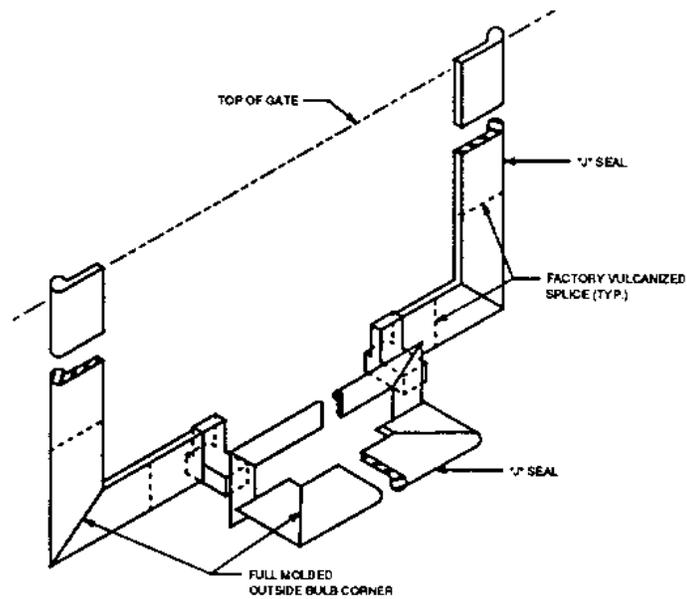
A SECTION
 SCALE 1 1/2" = 1'-0"

NOTES:

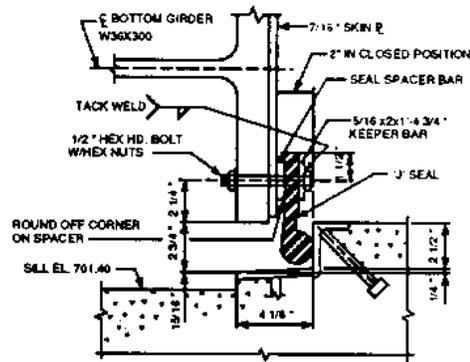
1. ALL STEEL ASTM A36 UNLESS OTHERWISE NOTED
2. THESE PLATES TO BE 100% ULTRASONIC TESTED FOR LAMINATIONS.

NOTE: THE DETAILS SHOWN ON THIS DRAWING WERE USED IN A PAST CORPS OF ENGINEERS DESIGN. THESE TYPICAL DETAILS ARE FURNISHED FOR INFORMATION ONLY AND MAY NOT CORRESPOND WITH THE CRITERIA AND DESIGN EXAMPLES INCLUDED IN APPENDICES B-E.

GATE CLOSURES LOCAL FLOOD PROTECTION PROJECTS TYPICAL UPPER HINGE DETAILS II
DEPARTMENT OF THE ARMY U.S. ARMY CORPS OF ENGINEERS WASHINGTON, D.C.
PLATE 7



LAYOUT OF GATE SEAL
N.T.S.



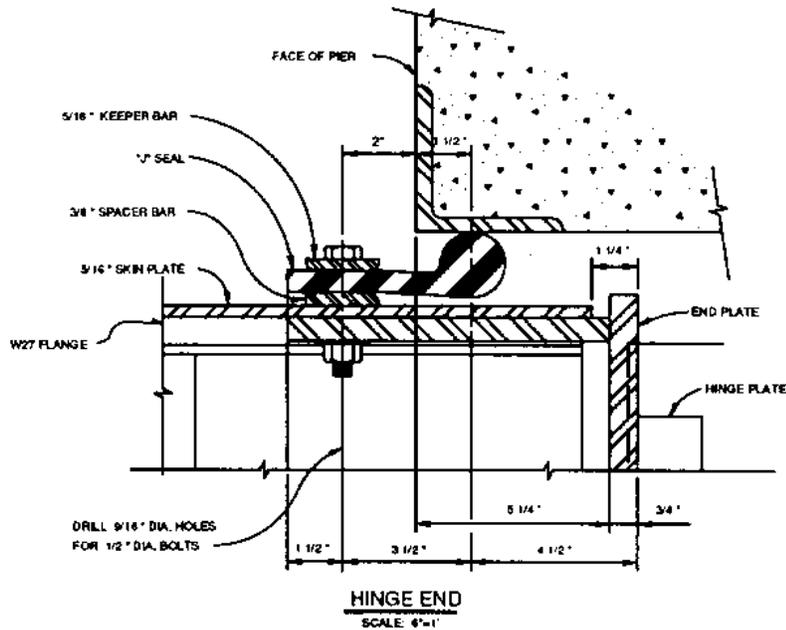
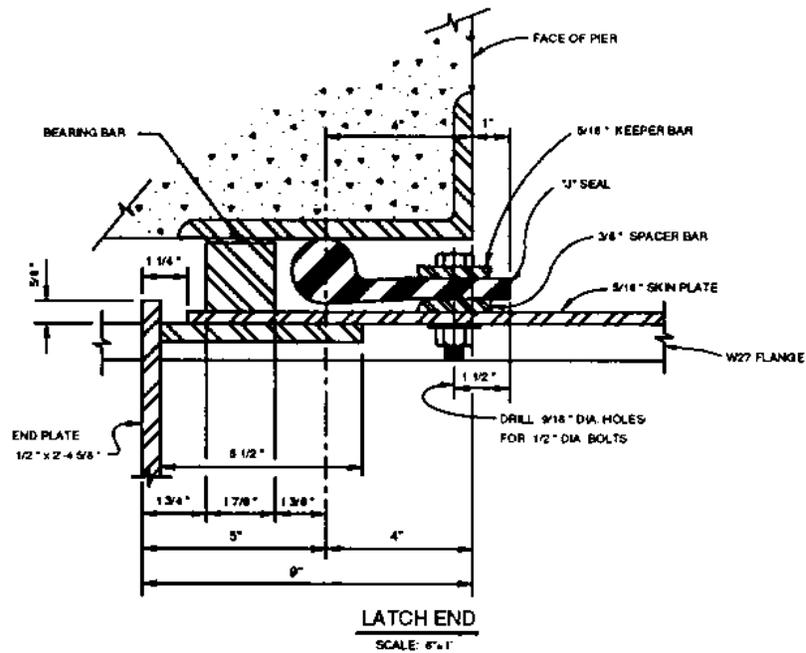
TYPICAL FIXED BOTTOM SEAL
SCALE: 3"=1'-0"

NOTES:

1. ALL STEEL ASTM A36, UNLESS OTHERWISE NOTED
2. ALL SEAL BOLTS AND NUTS SHALL BE CRES.
3. "J" SEALS TO HAVE 50 TO 60 DUROMETER HARDNESS.

NOTE: THE DETAILS SHOWN ON THIS DRAWING WERE USED IN A PAST CORPS OF ENGINEERS DESIGN. THESE TYPICAL DETAILS ARE FURNISHED "FOR INFORMATION ONLY" AND MAY NOT CORRESPOND WITH THE CRITERIA AND DESIGN EXAMPLES INCLUDED IN APPENDICES B-E.

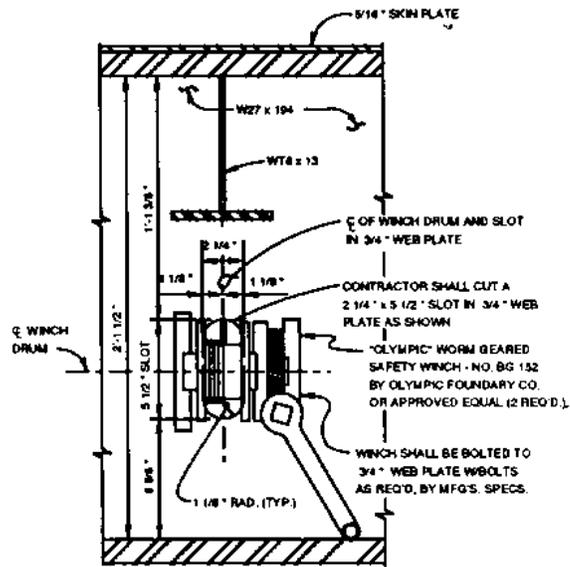
GATE CLOSURES LOCAL FLOOD PROTECTION PROJECTS TYPICAL SEAL DETAILS I	
 DEPARTMENT OF THE ARMY U.S. ARMY CORPS OF ENGINEERS WASHINGTON, D.C.	PLATE 6



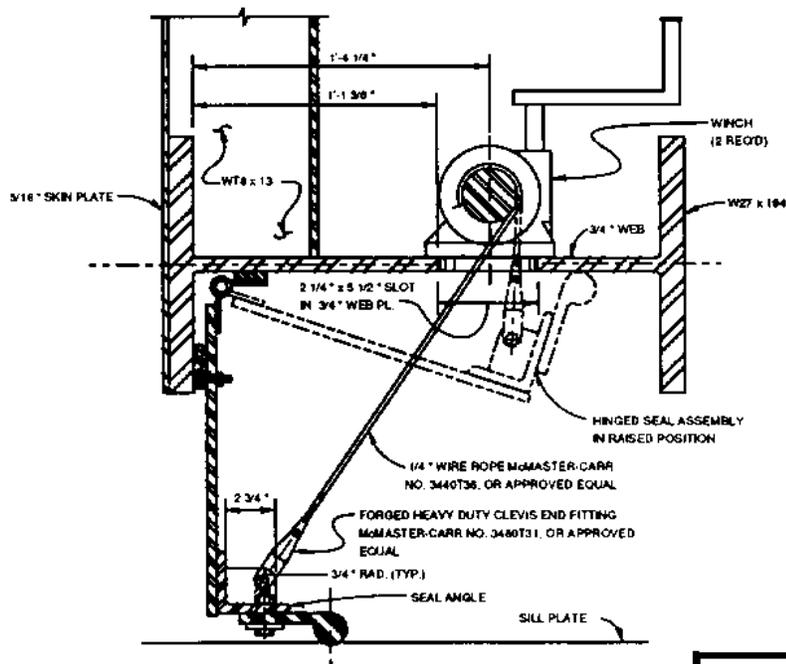
TYPICAL VERTICAL SIDE SEAL DETAILS

NOTE: THE DETAILS SHOWN ON THIS DRAWING WERE USED IN A PAST CORPS OF ENGINEERS DESIGN. THESE TYPICAL DETAILS ARE FURNISHED FOR INFORMATION ONLY AND MAY NOT CORRESPOND WITH THE CRITERIA AND DESIGN EXAMPLES INCLUDED IN APPENDICES B-E.

GATE CLOSURES LOCAL FLOOD PROTECTION PROJECTS TYPICAL SEAL DETAILS II
DEPARTMENT OF THE ARMY U.S. ARMY CORPS OF ENGINEERS WASHINGTON, D.C.
PLATE 9



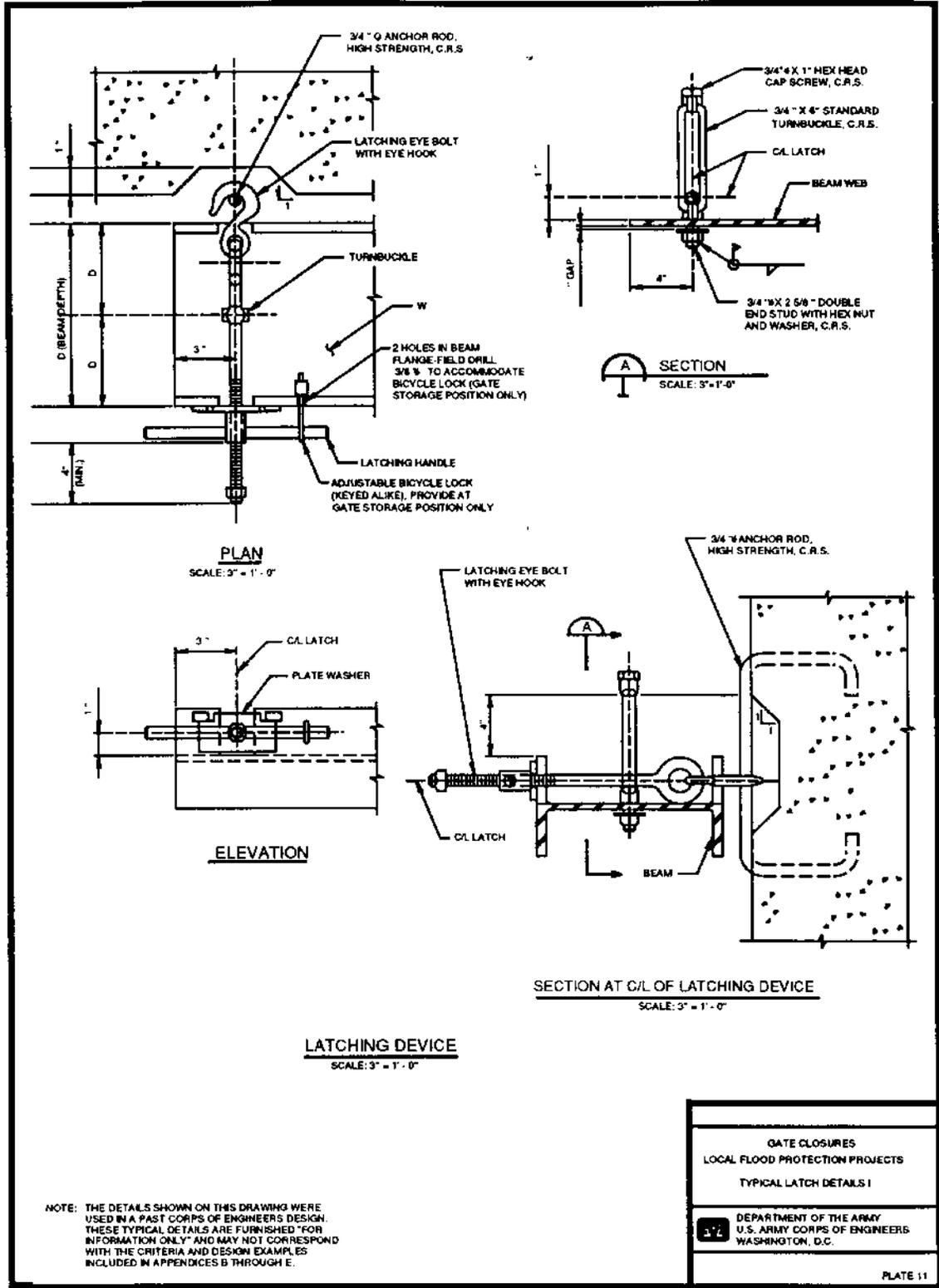
PLAN
SCALE: 3"=1'-0"

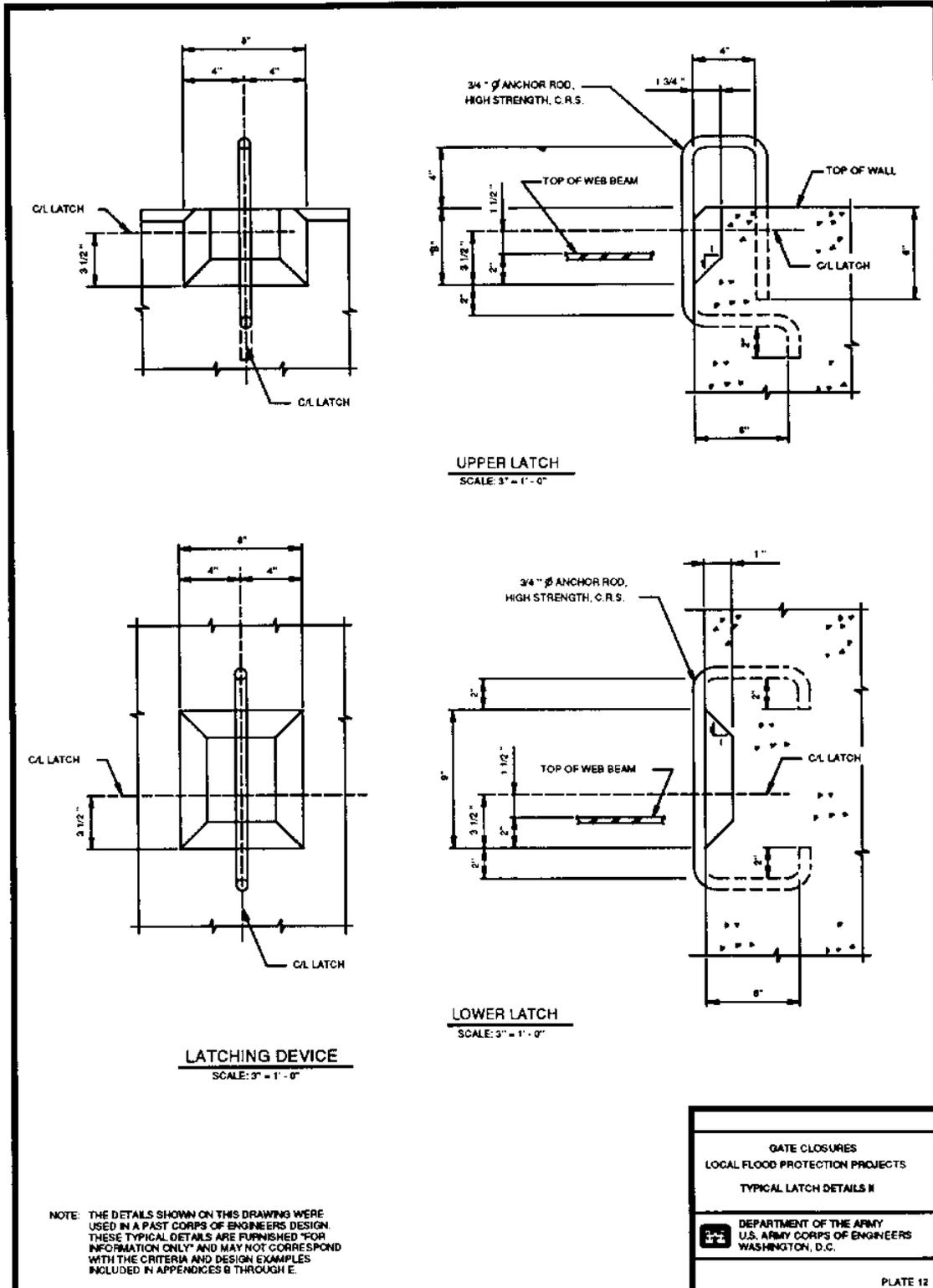


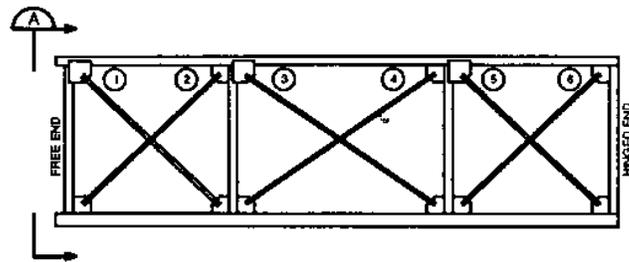
TYPICAL RETRACTABLE BOTTOM SEAL
SCALE: 3"=1'-0"

NOTE: THE DETAILS SHOWN ON THIS DRAWING WERE USED IN A PAST CORPS OF ENGINEERS DESIGN. THESE TYPICAL DETAILS ARE FURNISHED "FOR INFORMATION ONLY" AND MAY NOT CORRESPOND WITH THE CRITERIA AND DESIGN EXAMPLES INCLUDED IN APPENDICES B-E.

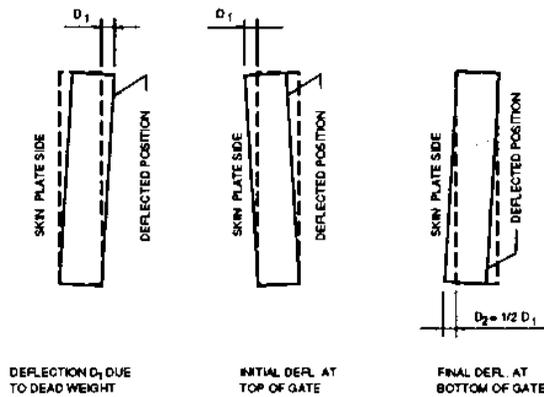
GATE CLOSURES LOCAL FLOOD PROTECTION PROJECTS TYPICAL SEAL DETAILS III	
DEPARTMENT OF THE ARMY U.S. ARMY CORPS OF ENGINEERS WASHINGTON, D. C.	
PLATE 10	







DIAGONAL BRACE DIAGRAM (SIM.)
SCALE: NONE



END SECTION
SCALE: NONE

NOTES:

1. A DEFLECTION OF THE GATE IS DEFINED AS A TWISTING OF THE GATE SUCH THAT THE FREE END IS OUT OF PLUMB. A POSITIVE DEFLECTION OF THE LEAF IS ONE IN WHICH THE TOP OF THE FREE END IS MOVED AWAY FROM THE SKINPLATE SIDE RELATIVE TO THE BOTTOM. THE MAGNITUDE OF THE DEFLECTION IS THE AMOUNT BY WHICH THE FREE END IS OUT OF PLUMB, AS SHOWN IN THE SKETCH AS D_1 .
2. WHEN ANY DIAGONALS ARE TIGHTENED, THEY SHALL BE TAKEN UP JUST TO THE POINT WHERE ALL OF THE SLACK IS REMOVED AND A VERY SLIGHT TENSION EXISTS. CARE SHALL BE EXERCISED TO SEE THAT THE AMOUNT OF THIS INITIAL TENSION IS AS SMALL AS POSSIBLE. THE SLACK SHALL BE CONSIDERED TO BE REMOVED WHEN THE DIAGONAL DOES NOT BOW IN OR OUT FROM THE GATE. NO ATTEMPT SHALL BE MADE TO REMOVE THE SLIGHT VERTICAL SAG WHICH WILL ALWAYS EXIST IN THE DIAGONAL BECAUSE OF ITS DEAD WEIGHT.
3. ALL STEEL ASTM A-36 UNLESS NOTED OTHERWISE.

NOTE: THE DETAILS SHOWN ON THIS DRAWING WERE USED IN A PAST CORPS OF ENGINEERS DESIGN. THESE TYPICAL DETAILS ARE FURNISHED "FOR INFORMATION ONLY" AND MAY NOT CORRESPOND WITH THE CRITERIA AND DESIGN EXAMPLES INCLUDED IN APPENDICES B THROUGH E.

GATE CLOSURES
LOCAL FLOOD PROTECTION PROJECTS
TYPICAL DIAGONAL PRESTRESSING
NOTES I

U.S. DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
WASHINGTON, D.C.

METHOD OF PRESTRESSING DIAGONALS

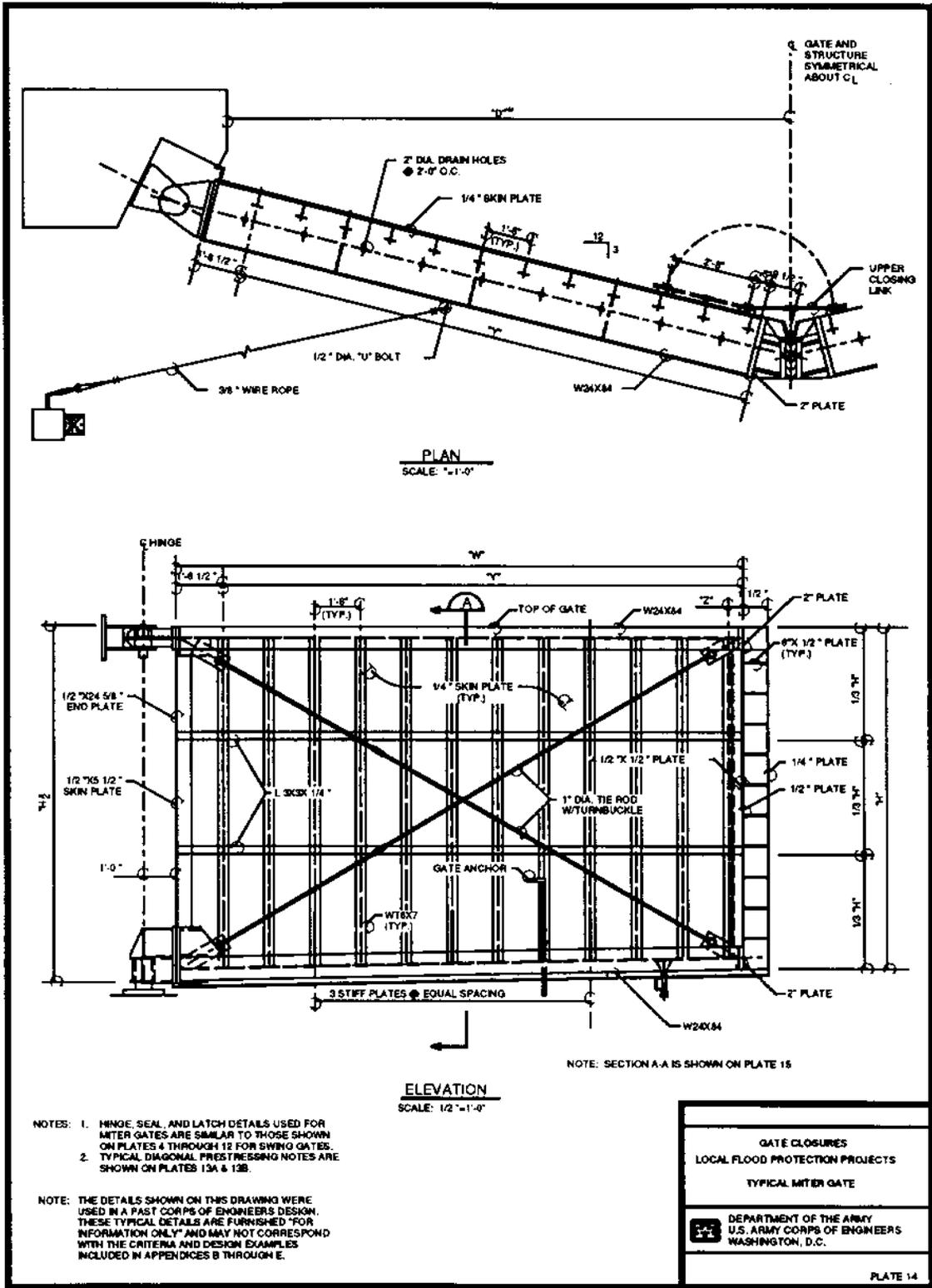
1. ENSURE THAT ALL DIAGONALS ARE SLACK.
2. LUBRICATE THE TURNBUCKLES ON THE DIAGONALS SO THEY CAN TURN EASILY.
3. ROSETTES FOR THE STRAIN GAUGES SHALL BE PLACED ON ALL DIAGONALS A MINIMUM OF 20 HR BEFORE PRESTRESSING, UNLESS AN APPROVED QUICK-SETTING CEMENT IS USED.
4. WITHOUT THE RESTRAINT OF ANY GUYS OR JACKS, THE GATE WILL DEFLECT IN A POSITIVE DIRECTION UNDER ITS OWN DEAD WEIGHT. THIS DEFLECTION (D_1) SHALL BE MEASURED.
5. THE LEAF SHALL BE GUYED AT THE BOTTOM OF ITS FREE END, AND A JACKING OR PULLING DEVICE SHALL BE PLACED AT THE TOP OF THE FREE END.
6. MOVE THE FREE END TOWARD THE SKINPLATE SIDE UNTIL THE LEAF HAS A DEFLECTION IN A NEGATIVE DIRECTION EQUAL TO D_1 AT THE TOP.
7. HOLD THIS DEFLECTION AND TIGHTEN ALL OF THE DIAGONALS. THESE DIAGONALS SHALL BE TIGHTENED SO THAT THERE IS NO HORIZONTAL BOW, NO ATTEMPT WILL BE MADE TO REMOVE ALL OF THE VERTICAL SAG.
8. RESTRAIN THE TOP OF THE FREE END LEAF WITH GUYS.
9. PROCEED WITH THE JACKING AT THE BOTTOM OF THE FREE END UNTIL A DEFLECTION D_2 IS OBTAINED. DURING THIS OPERATION, THE ADJUSTMENT OF DIAGONALS 1, 3, AND 5 WILL NOT BE CHANGED. HOWEVER, TIGHTENING OF DIAGONALS 2, 4, AND 6 WILL BE CONTINUED UNTIL THERE IS A SLIGHT TENSION IN THE MEMBERS WHEN THE GATE IS IN ITS FINAL DEFLECTED POSITION.
10. DURING THE PRESTRESSING OPERATION, A STRAIN GAUGE WILL BE USED TO DETERMINE THE STRESS IN THE DIAGONALS. THE MAXIMUM ALLOWABLE STRESS IN THE DIAGONALS DURING PRESTRESSING SHALL BE 20,000 PSI.
11. AFTER THE FINAL ADJUSTMENT OF THE DIAGONALS, THE GUYS AND JACKS WILL BE REMOVED AND THE GATE SHOULD RETURN TO A PLUMB POSITION. A DEFLECTION OF PLUS OR MINUS 1/8" WILL BE PERMITTED AT THE GATE'S FREE END.
12. FINAL STRESSES, UNLESS OTHERWISE APPROVED BY THE CONTRACTING OFFICER, SHALL BE 4,000 PSI MINIMUM AND 18,000 PSI MAXIMUM FOR ALL DIAGONALS.

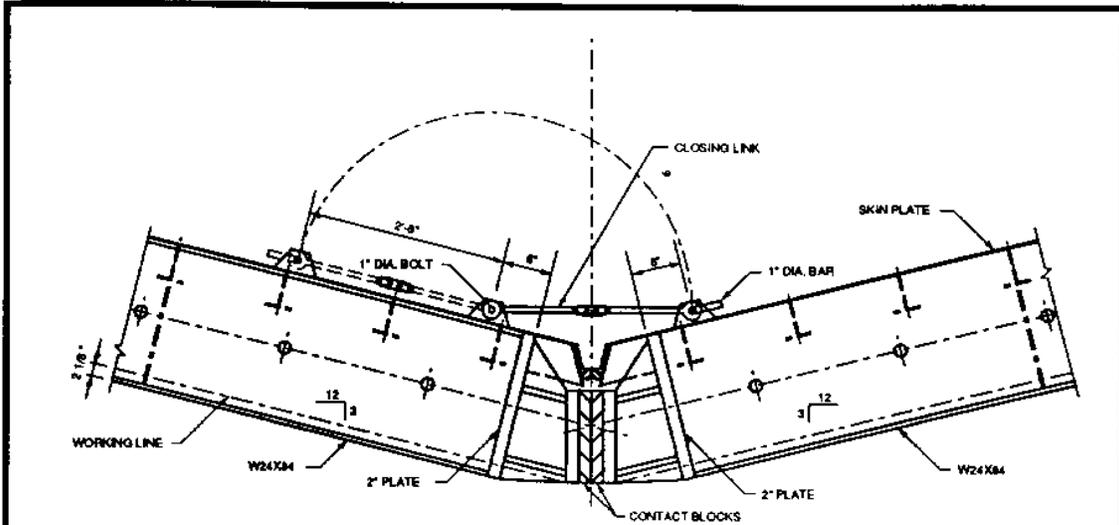
NOTE: THE DETAILS SHOWN ON THIS DRAWING WERE USED IN A PAST CORPS OF ENGINEERS DESIGN. THESE TYPICAL DETAILS ARE FURNISHED "FOR INFORMATION ONLY" AND MAY NOT CORRESPOND WITH THE CRITERIA AND DESIGN EXAMPLES INCLUDED IN APPENDICES B THROUGH E.

GATE CLOSURES
LOCAL FLOOD PROTECTION PROJECTS
TYPICAL DIAGONAL PRESTRESSING
NOTES II

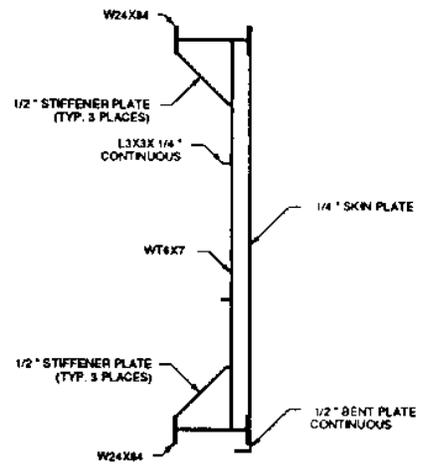
DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
WASHINGTON, D.C.

PLATE 136





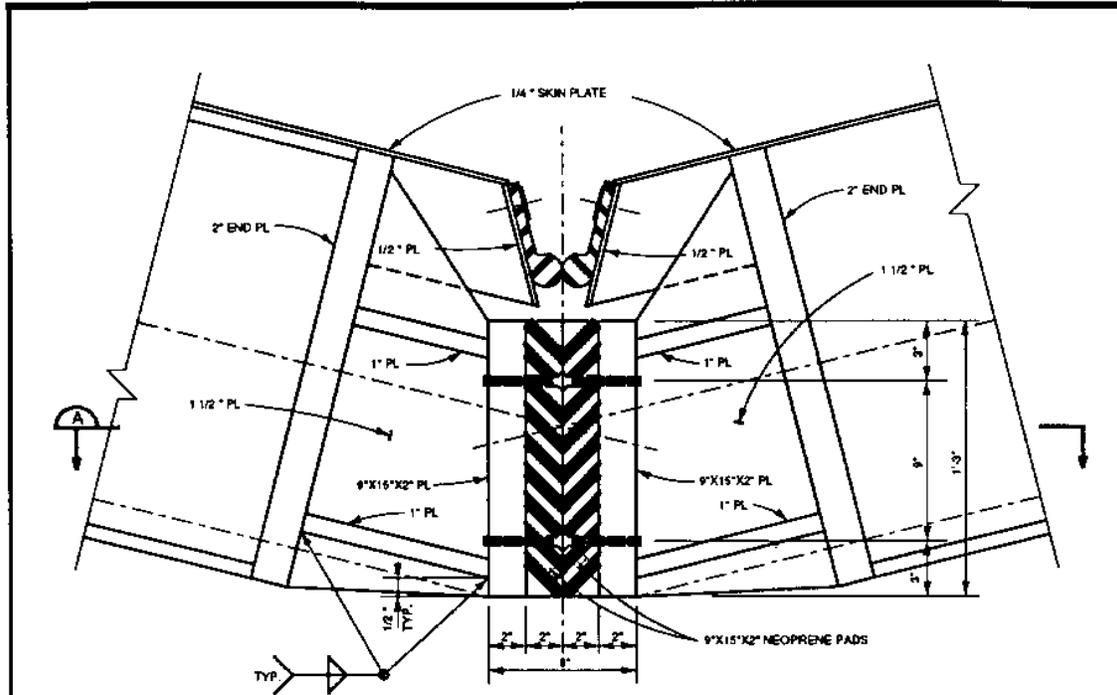
PLAN OF MITER DETAILS
SCALE: 1"=1'-0"



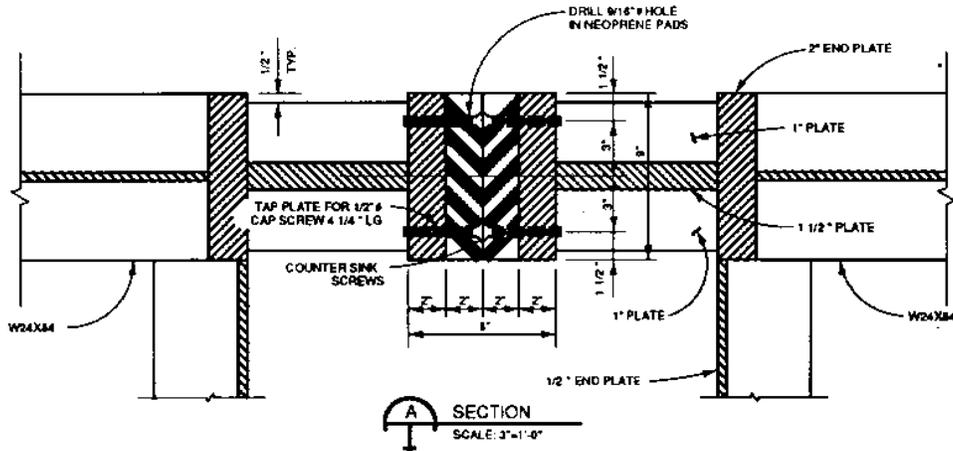
A SECTION
SCALE: 1/2"=1'-0"

NOTE: THE DETAILS SHOWN ON THIS DRAWING WERE USED IN A PAST CORPS OF ENGINEERS DESIGN. THESE TYPICAL DETAILS ARE FURNISHED "FOR INFORMATION ONLY" AND MAY NOT CORRESPOND WITH THE CRITERIA AND DESIGN EXAMPLES INCLUDED IN APPENDICES B THROUGH E.

GATE CLOSURES LOCAL FLOOD PROTECTION PROJECTS TYPICAL MITER GATE DETAILS I	
	DEPARTMENT OF THE ARMY U.S. ARMY CORPS OF ENGINEERS WASHINGTON, D.C.
PLATE 15	



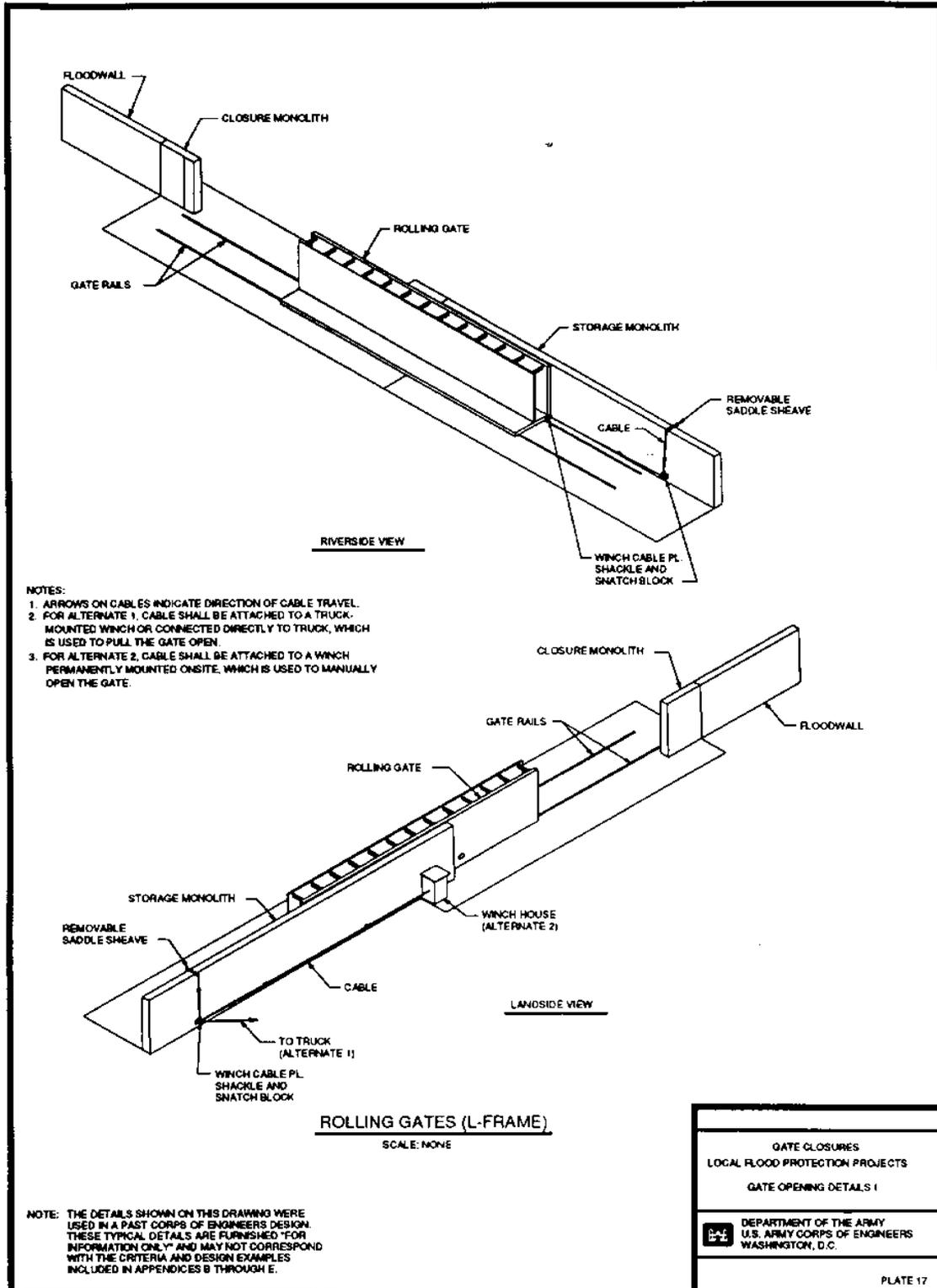
PLAN OF MITER CONTACT BLOCKS
SCALE: 3"-1'-0"

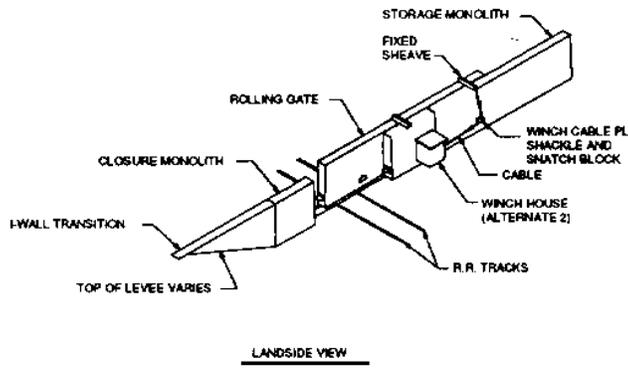
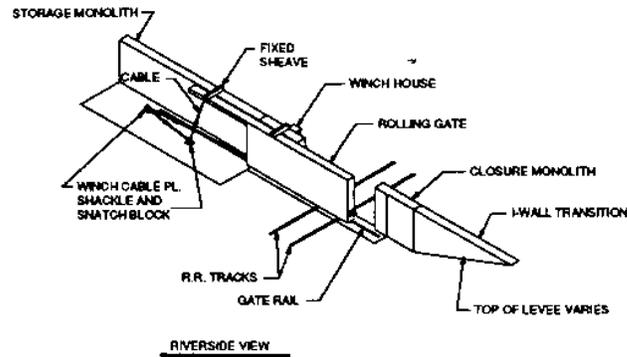


SECTION
SCALE: 3"-1'-0"

- NOTES:
1. HINGE, SEAL, AND LATCH DETAILS USED FOR MITER GATES ARE SIMILAR TO THOSE SHOWN FOR SWING GATES.
 2. TYPICAL DIAGONAL PRESTRESSING NOTES ARE SHOWN ON PLATES 13A AND 13B.
- NOTE: THE DETAILS SHOWN ON THIS DRAWING WERE USED IN A PAST CORPS OF ENGINEERS DESIGN. THESE TYPICAL DETAILS ARE FURNISHED FOR INFORMATION ONLY, AND MAY NOT CORRESPOND WITH THE CRITERIA AND DESIGN EXAMPLES INCLUDED IN APPENDICES B THROUGH E.

GATE CLOSURES LOCAL FLOOD PROTECTION PROJECTS TYPICAL MITER GATE	
 DEPARTMENT OF THE ARMY U.S. ARMY CORPS OF ENGINEERS WASHINGTON, D.C.	PLATE 18



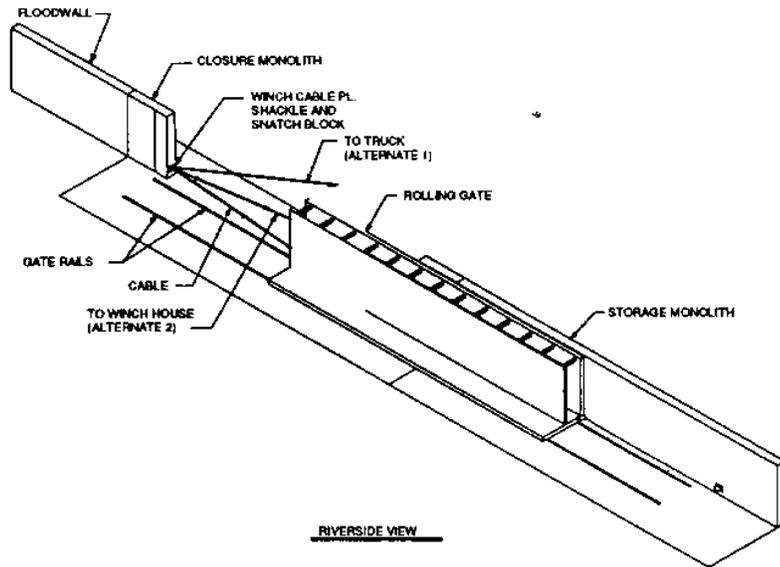


ROLLING GATE WITH STABILIZING TROLLEYS
 SCALE: NONE

- NOTES:
1. ARROWS ON CABLES INDICATE DIRECTION OF CABLE TRAVEL.
 2. FOR ALTERNATE 1, CABLE SHALL BE ATTACHED TO A TRUCK-MOUNTED WINCH OR CONNECTED DIRECTLY TO TRUCK, WHICH IS USED TO PULL THE GATE OPEN.
 3. FOR ALTERNATE 2, CABLE SHALL BE ATTACHED TO A WINCH PERMANENTLY MOUNTED ONSITE, WHICH IS USED TO MANUALLY OPEN THE GATE.

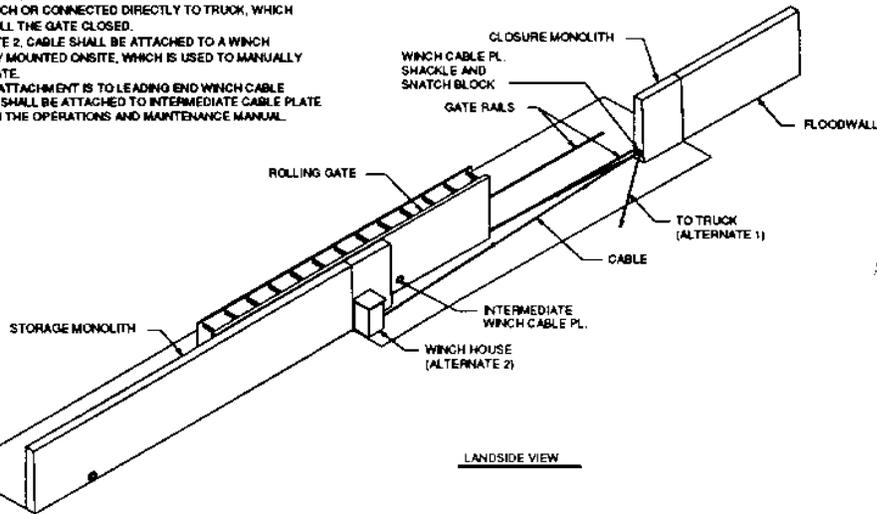
NOTE: THE DETAILS SHOWN ON THIS DRAWING WERE USED IN A PAST CORPS OF ENGINEERS DESIGN. THESE TYPICAL DETAILS ARE FURNISHED FOR INFORMATION ONLY AND MAY NOT CORRESPOND WITH THE CRITERIA AND DESIGN EXAMPLES INCLUDED IN APPENDICES B THROUGH E.

GATE CLOSURES LOCAL FLOOD PROTECTION PROJECTS GATE OPENING DETAILS II
DEPARTMENT OF THE ARMY U.S. ARMY CORPS OF ENGINEERS WASHINGTON, D.C.
PLATE 18



NOTES:

1. ARROWS ON CABLES INDICATE DIRECTION OF CABLE TRAVEL.
2. FOR ALTERNATE 1, CABLE SHALL BE ATTACHED TO A TRUCK-MOUNTED WINCH OR CONNECTED DIRECTLY TO TRUCK, WHICH IS USED TO PULL THE GATE CLOSED.
3. FOR ALTERNATE 2, CABLE SHALL BE ATTACHED TO A WINCH PERMANENTLY MOUNTED ONSITE, WHICH IS USED TO MANUALLY CLOSE THE GATE.
4. INITIAL CABLE ATTACHMENT IS TO LEADING END WINCH CABLE PLATE. CABLE SHALL BE ATTACHED TO INTERMEDIATE CABLE PLATE AS DEFINED IN THE OPERATIONS AND MAINTENANCE MANUAL.

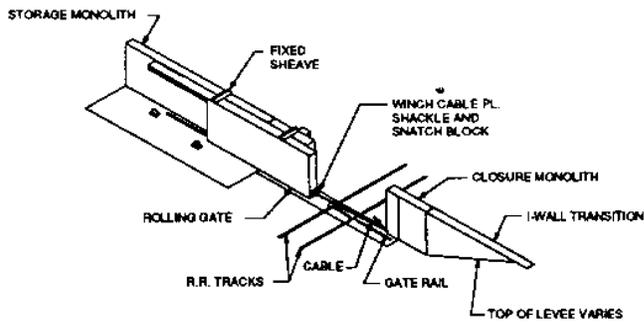


ROLLING GATES (L-FRAME)
SCALE: NONE

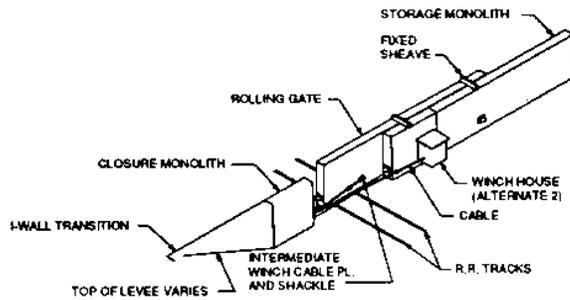
NOTE: THE DETAILS SHOWN ON THIS DRAWING WERE USED IN A PAST CORPS OF ENGINEERS DESIGN. THESE TYPICAL DETAILS ARE FURNISHED "FOR INFORMATION ONLY" AND MAY NOT CORRESPOND WITH THE CRITERIA AND DESIGN EXAMPLES INCLUDED IN APPENDICES B THROUGH E.

GATE CLOSURES
LOCAL FLOOD PROTECTION PROJECTS
GATE CLOSING DETAILS I

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
WASHINGTON, D.C.



RIVERSIDE VIEW



LANDSIDE VIEW

ROLLING GATE WITH STABILIZING TROLLEYS

SCALE: NONE

NOTES:

1. ARROWS ON CABLES INDICATE DIRECTION OF CABLE TRAVEL.
2. FOR ALTERNATE 1, CABLE SHALL BE ATTACHED TO A TRUCK-MOUNTED WINCH OR CONNECTED DIRECTLY TO TRUCK, WHICH IS USED TO PULL THE GATE CLOSED.
3. FOR ALTERNATE 2, CABLE SHALL BE ATTACHED TO A WINCH PERMANENTLY MOUNTED ONSITE, WHICH IS USED TO MANUALLY CLOSE THE GATE.
4. INITIAL CABLE ATTACHMENT IS TO LEADING END WINCH CABLE PLATE. CABLE SHALL BE ATTACHED TO INTERMEDIATE CABLE PLATE AS DEFINED IN THE OPERATIONS AND MAINTENANCE MANUAL.

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GATE CLOSURES LOCAL FLOOD PROTECTION PROJECTS GATE CLOSING DETAILS II	
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PLATE 20	

